

GRANT & HACKH'S CHEMICAL DICTIONARY

[*American, International, European and British Usage*]

*Containing the Words Generally Used in Chemistry,
and Many of the Terms Used in the Related
Sciences of Physics, Medicine, Engineering,
Biology, Pharmacy, Astrophysics,
Agriculture, Mineralogy, etc.*

Based on Recent Scientific Literature

FIFTH EDITION

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rotates the plane of polarized light to the left (counterclockwise). Indicated by the prefix (-), or *l*-.
levorphanol tartrate $C_{17}H_{23}ON \cdot C_4H_6O_6 \cdot 2H_2O = 443.5$.
 (-)-3-Hydroxy-N-methylmorphinan. Levo-Dromoran, Dromovan. White crystals, m.116, sparingly soluble in water. A potent analgesic (USP, BP).

Levothyroid Trademark for levothyroxine sodium.

levothyroxine sodium $C_{15}H_{10}O_4NI_4Na \cdot nH_2O = 798.9$.
 Eltroxin, Levothyroid, Synthroid. Yellowish powder, slightly soluble in water. A hormone for the thyroid gland; used to treat hypothyroidism (USP, EP, BP).

levulic acid Levulinic acid.

levulin Synanthrose.

levulinamide $MeCOCH_2CH_2CONH_2 = 115.1$. Colorless crystals, m.107.

levulinic *l*. acid $MeCOCH_2CH_2 \cdot COOH = 116.1$. Levulinic acid, 3-acetylpropionic acid. Colorless leaflets, m.33, soluble in water. homo $\sim C_6H_{10}O_3 = 130.1$. 4-Oxohexanoic acid. m.40. methyl \sim Homolevulinic acid.

l. aldehyde $C_5H_8O_2 = 100.1$. 3-Acetylpropionaldehyde. Colorless liquid, d.1.016, decomp. 187, soluble in water. *l*. hydrazide $MeCO \cdot CH_2 \cdot CH_2 \cdot CO \cdot NHNH_2 = 130.1$. Colorless crystals, m.82. *l*. imine $MeC(NH)CH_2 \cdot CH_2 \cdot COOH = 115.1$. Colorless crystals, m.95.

levulosans See *fructosans*.

levulose Fructose.

levymite $Ca(Al_2Si_4O_{12}) \cdot 6H_2O$. A zeolitic ion-exchange material.

Lewis, Gilbert Newton (1875-1946) American chemist, noted for thermodynamic theories applied to chemistry and atomic structure. *L*. acid See *Lewis acid* under *acid*. *L*'s atom See *atomic structure*. *L*. base. See *Lewis acid* under *acid*. *L*. color theory Color is produced by the absorption of certain rays by those electrons of a molecule which vibrate with the same frequency. *L*.-Langmuir theory The atom is built up of successive shells which hold 2, 8, 18, 32, 18, and 8 electrons as their maximum capacities. *L*. symbols Bonds illustrated by indicating electrons as dots. Cf. *octet*, *formula*, *bond*. *L*. theory A chemical bond is *polar* when an electron passes from one atom to another; *nonpolar* when 2 atoms share a pair of electrons equally.

lewisite British anti $\sim C_2H_5OS_2 = 124.2$. Dithiol (U.S. usage). BAL. (\pm)-3-Hydroxy-1,2-propanedithiol. An antidote for *l*. and other metal poisons, e.g., bismuth, mercury, gold.

l. I $ClH \cdot CH \cdot AsCl_2 = 207.3$. (E)-2-Chlorovinylchloroarsine. An irritant liquid, d.1.89, b.190 (decomp.); a vesicant poison. Cf. *leucite*, *Lucite*. *l*. II $(ClCH \cdot CH)_2AsCl$.

Lexan Trademark for a thermoplastic polycarbonate condensation product of bisphenol-A and phosgene.

ley (1) The mixture of salts 10-20 and glycerol 6-8% formed by saponification of crude fats by sodium hydroxide in soap manufacture. (2) Describing a system of farming of crops in rotation, interspersed with ploughing. Cf. *lye*.

Leyden jar See *Leyden jar* under *jar*.

li. Abbreviation for link.

li. Symbol for lithium.

liatris Deer's-tongue. The dried leaves of *Liatris odoratissima* (Compositae); used for flavoring and in tobacco.

Libavius, Andreas (1540-1616) German alchemical writer and pioneer in blowpipe analysis.

liberation The act of setting free, as the formation of carbon dioxide from chalk.

libration A real or apparent oscillating motion. Usually applied to the movement of the moon relative to the earth.

Librium Trademark for chlordiazepoxide hydrochloride.

licanic acid A gelling fatty acid in drying oils used for paints.

lichen Algae and fungi which live symbiotically, i.e., 2 primitive plants, one with, the other without, chlorophyll, which live together; e.g., Iceland moss. They yield coloring matter (litmus, orchil, zearin), acids (e.g., orsellic acid), carbohydrates, and depsides. *l*. starch Lichenin. *l*. sugar Erythritol.

licheniformin An antibiotic from *Bacillus licheniformis*.

lichenin $(C_6H_{10}O_5)_n = (162.1)_n$ [$n = 80-160$]. Lichen starch, moss starch. A β -glucopyranose carbohydrate derived from Iceland moss, *Cetraria islandicus*, which is digested by invertebrates only. White powder, soluble in hot water, m.10.

lichenol $C_9H_9O_4 \cdot C_2H_5 = 210.2$. The ethyl ester of everminic acid, from the oil of oak moss, *Evernia prunastri*. Cf. *sparassol*.

lichesteric acid $C_{18}H_{31}O_2 \cdot COOH = 324.5$. m.125, insoluble in water. From Iceland moss.

Lichtenberg figures The pattern formed by an electric spark passing through a thin layer of insulator, as, sulfur. Cf. *klydonograph*.

licorice Glycyrrhiza (U.S. usage). Cf. *liquorice*. Indian \sim Abrus. Spanish \sim Glycyrrhiza.

lidocaine hydrochloride $C_{14}H_{22}ON_2 \cdot HCl \cdot H_2O = 288.8$.

Lignocaine hydrochloride. Xyllocaine. White, bitter crystals, m.77, soluble in water. A local anesthetic, and given intravenously to control heart rhythm after myocardial infarction (USP, EP, BP).

Lieben solution A solution of iodine in potassium iodide.

Liebermann, Carl (1842-1914) German chemist noted for the synthesis of alizarin (with Gräbe). *L*. reaction Sodium nitrite in concentrated sulfuric acid gives a brown color, changing to blue, in presence of a phenol. The mixture poured into water gives a red solution, which changes to blue on addition of alkali (formation of *p*-nitrosophenol).

Liebig, Justus Freiherr von (1803-1873) German chemist, founder of agricultural chemistry. *L*. condenser A glass tube, surrounded by a wider tube through which water circulates. *L*. extract A meat extract used as a nutrient for making biological bouillon. *L*. potash bulb A triangularly bent glass tube with 2 or more bulbs filled with potassium hydroxide; used in gas analysis.

Liesegang, Raphael Edward (1869-1947) German chemist. *L*. rings A periodic precipitation, formed as bands in gelatin, by the gradual diffusion toward one another of 2 mutually precipitating ions.

life (1) The vital force: the principle underlying the phenomena of organized beings. It depends on the *protoplasm*, which exercises the function of *metabolism*, *growth*, *reproduction*, *adaptation*, and *evolution*, q.v. (2) A synonym for "time" or "time period"; as: *damping* \sim See *damping period*. half- \sim See *half-life*. (3) Colloquially, the period of usefulness of a machine or other inanimate object.

l. elements The *bioelements*, q.v., necessary for an organism. *l*. everlasting The dried herb of *Gnaphalium obtusifolium* (*Antennaria dioica*), Compositae. *l*.root Senecio.

ligancy* The number of neighboring atoms bonded to an atom, irrespective of the nature of the bonds.

ligand A group of atoms around a central atom in a complex compound; e.g., CN^- and F^- are the ligands in $[Fe(CN)_6]^{4-}$ and $[SiF_6]^{2-}$, respectively. See *radicals*, Table 70 on p. 494. *l*. field theory The use of light to study the effect on the energy levels of a metal ion when a *l*. approaches it to form a complex.

ligase* See *enzymes*, Table 30.

ligasoid A disperse colloidal system, consisting of a liquid phase suspended in a gaseous phase; as, a fog.